Understanding the Relationship of Health Risks to Health Costs: Keeping the Dollars Straight

by
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- **Health risk appraisals (HRAs)**
- **Targeted high-risk and at-risk telephonic coaching**
- **Custom and "turn-key" population health management (PHM) programs**
- **Consumer health training and coaching**
- **Consultation/services in Health and Productivity Management (HPM)**

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Introducing….

Larry Chapman, M.P.H.
Chairman and Co-Founder
Summex Health Management
Seattle, WA and Indianapolis, IN

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Agenda

- **A brief history of health risk research**
- **Health cost distributions in working populations**
- **Evidence on major risk factors**
- **Critical assumptions**
- **Going to a deeper level**
- **A strategic and tactical perspective**
- **A summary of main points**

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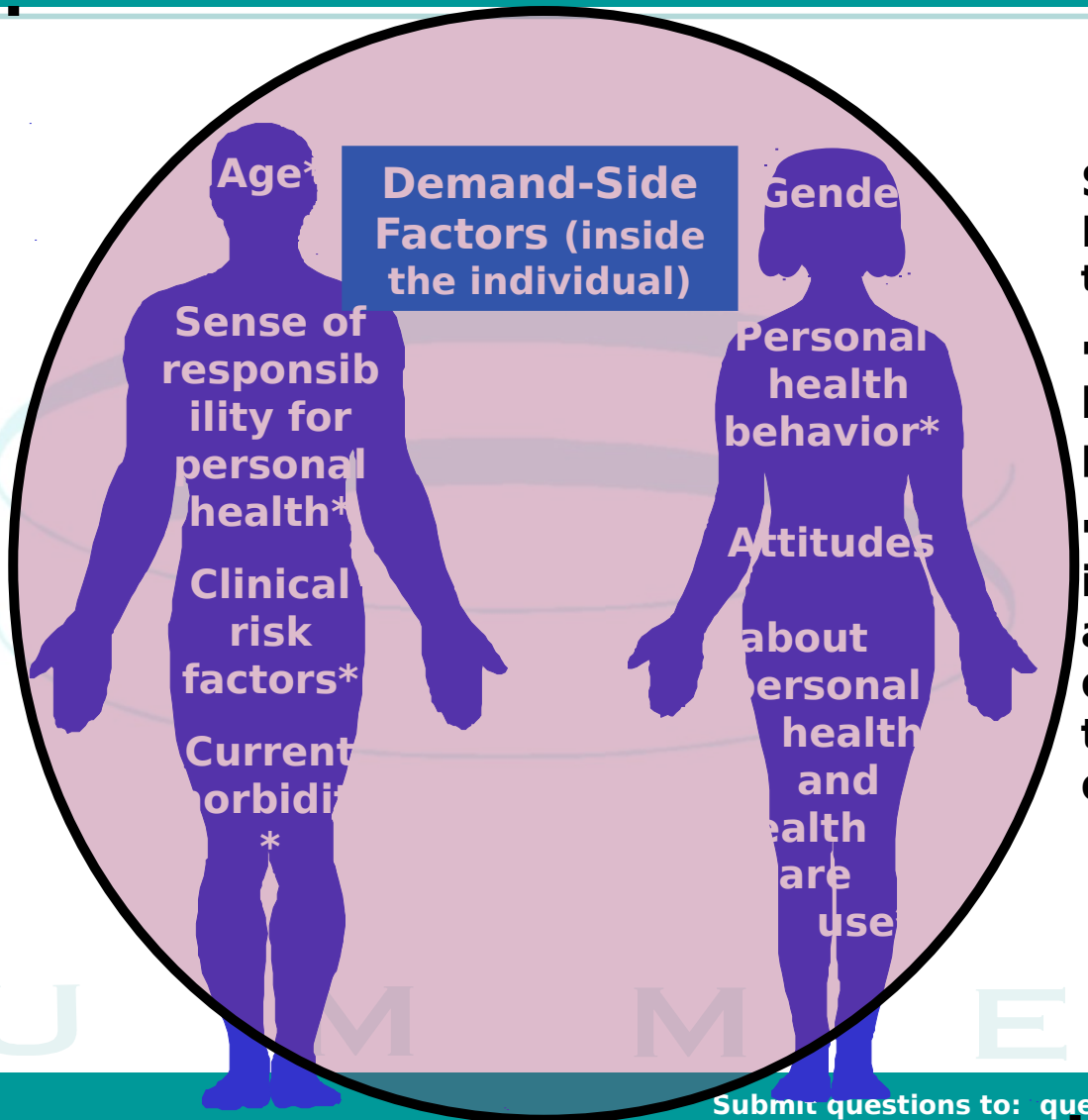
Determinants of Health Care Use

Supply-Side Factors (outside the individual)

- **Extent and scope of insurance coverage***
- **Point-of-use cost sharing***
- **Geographic access to services**



Supply-Side Factors (outside the individual)

- **Regional or local practice patterns**
- **Provider incentives affecting diagnosis and treatment decisions***

*** =Potentially modifiable.**

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Health Risks - Defined

Health Risk Measure	High-Risk Criteria
Smoking	Current smoker
Physical activity	Rarely/never or non-reported
Medication/drug use	Almost every day
Absences due to illness	Five days or more
Drinking alcohol	>21 drinks a week
Seat belt	<90% of time
Systolic BP	> 140 mm/Hg
Diastolic BP	>90 mm/Hg
Cholesterol	>240 mg/dl
Relative body weight	>20% overweight

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Early Studies

Relationship of Health Risks to Health

Item \ Study	Yen #1	Brink #2	Anderson #3	Bertera #4	Leigh #5	Manning #6	Weighted Average[7]
Smoking	51.9	18.4	31.2	31.8	42.8	11.3	27.9
Alcohol use	83.1	-8.5	-11.8	12.0	113.1	5.6	9.8
Obesity	38.0	11.0	37.3	12.7	53.0	NA	13.3
Exercise	81.7	13.9	8.3	4.0	77.7	12.1	7.9
Seat belts	34.4	12.7	9.5	8.4	233.4	NA	10.6
Cholesterol	29.2	2.2	0.0	11.5	NA	NA	10.2
Blood pressure	10.5	11.3	7.3	10.5	NA	NA	10.5
Drugs & medications	80.4	NA	NA	NA	NA	NA	80.4
Stress	52.8	NA	24.4	NA	NA	NA	37.9
Eating habits	NA	NA	40.5	NA	NA	NA	40.5
Life years in study	5,514	40,000+	6,000+	229,880	1,558	40,600	323,552
Proportion of total life years	0.017	0.123	0.018	0.714	0.004	0.124	1.00
Years of Study	3	3	1-3	5	1	7	21

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Early Studies

#1 Brink, S. Health Risks and Behavior: The Impact on Medical Costs. (1987) Miliman & Robertson, Inc. with Control Data Corporation, p. 24.

#2 Yen, L. et.al. (1991) "Associations Between Health Risk Appraisal Scores and Employee Medical Claims Costs in a Manufacturing Company." American Journal of Health Promotion, 6(1), September/October): 456-54.

#3 Bertera, R. (1991) "The Effects of Behavioral Risks on Absenteeism and Health Costs in the Workplace." Journal of Occupational Medicine, 33(11) November: 1119-1124.

#4 Manning, W., et.al., The Costs of Poor Health Habits, Harvard University Press, 1991, pp. 223.

#5 Leigh, J.P. and J. Fries. (1992) "Health Habits, Health Care Use and Costs in a Sample of Retirees." Inquiry, v 29 Spring: 44-45.

#6 Anderson, D., et.al. (1995) Health Risks and Their Impact on Medical Costs. Miliman & Robertson, Inc. p. 24.

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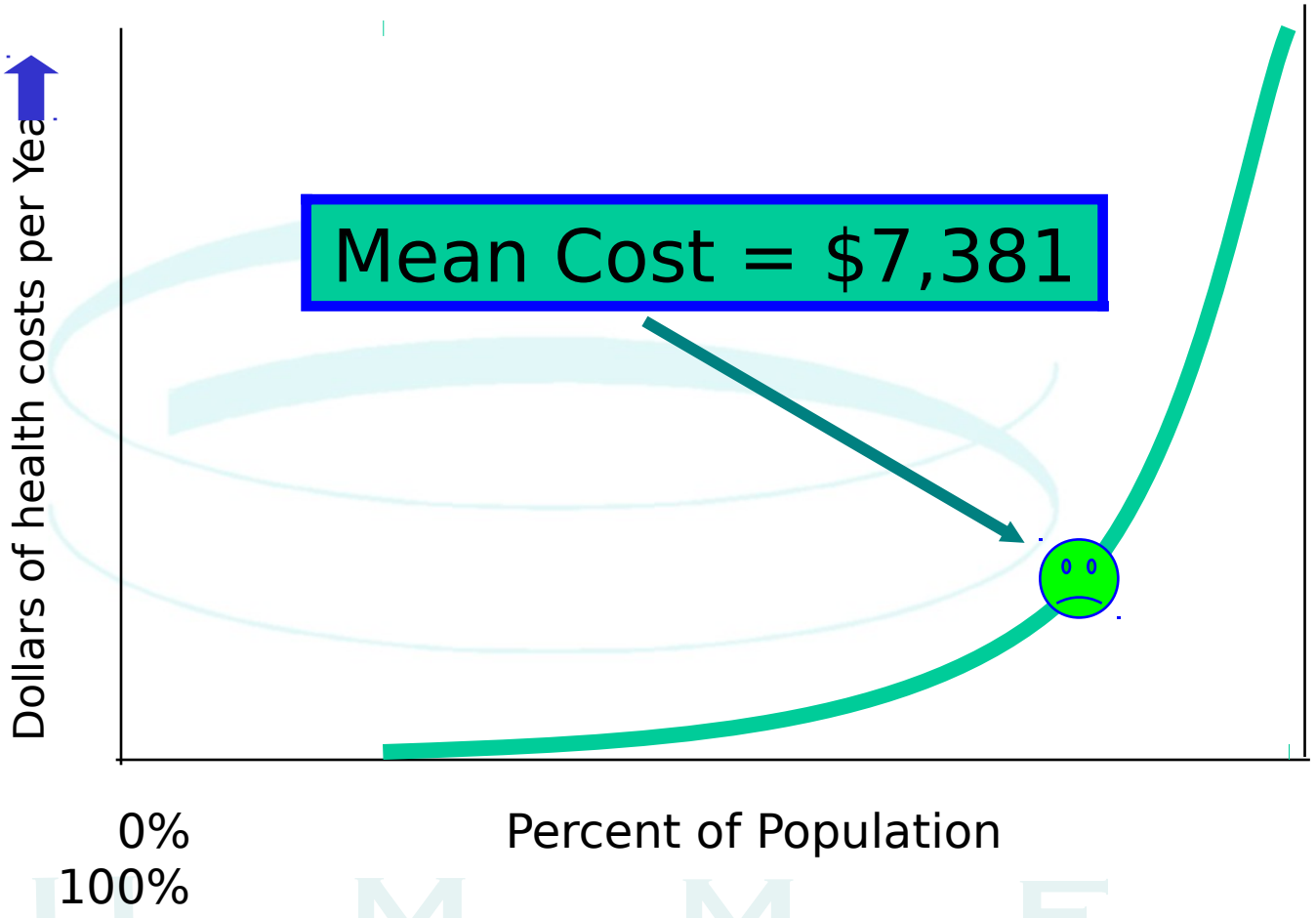
Pattern of Health Care Costs



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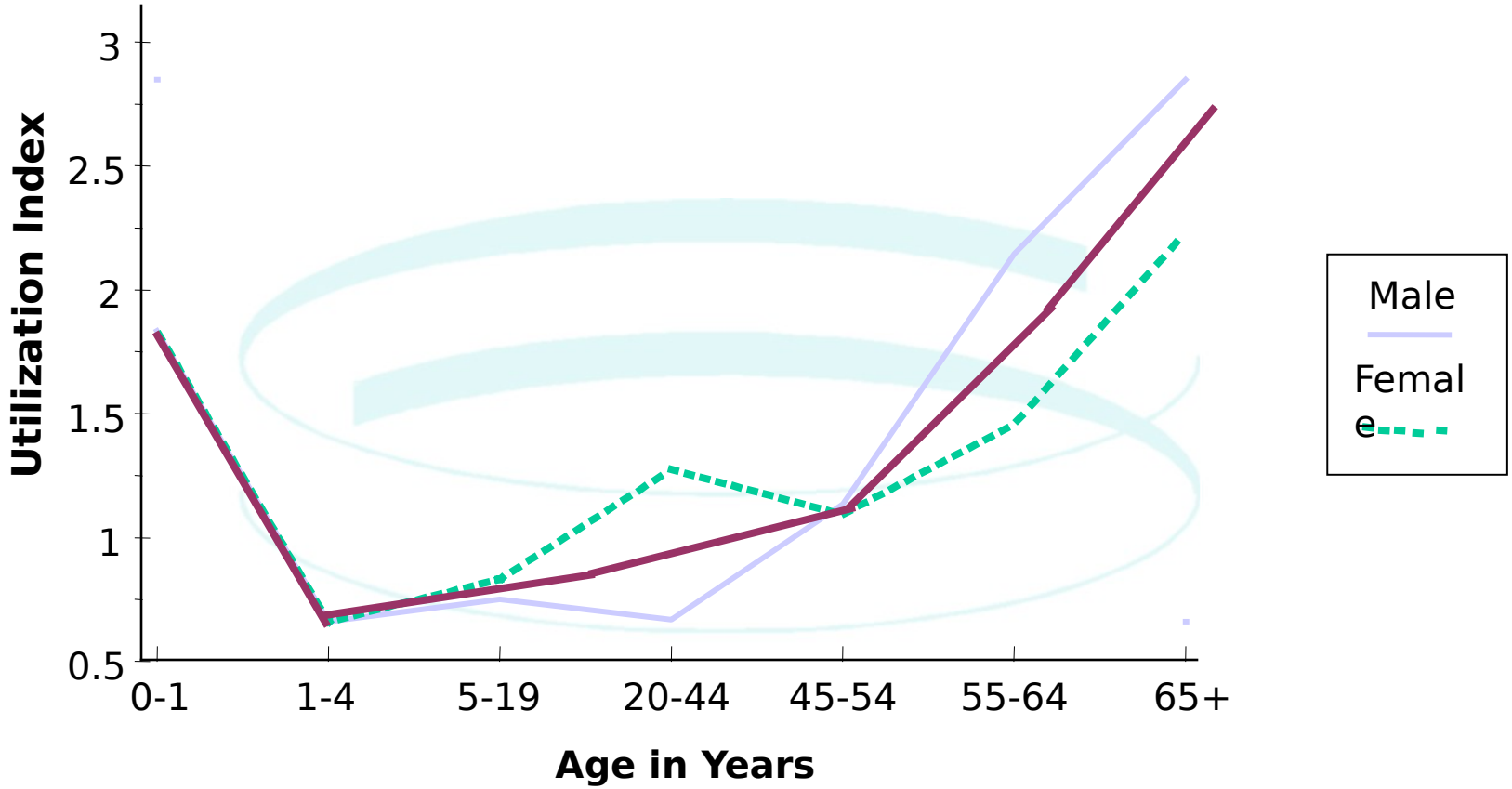
Utilization “U” Shaped Curve



Source: IFEBP HCCM Program

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Key Research Findings

Year	Major Findings
1990	High risk persons are high cost for individual and multiple risks (prospective data)
1993	Absenteeism shows the same relationship as medical costs
1993	Excess costs are related to excess risks
1994	Changes in costs follow changes in risks
1995	Risk combinations are the most powerful

Source: Health Management Research Center, Univ. of Michigan

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Key Research Findings

Year	Major Findings
1996	Changes in risk drive changes in cost when targeted according to specific risk combinations: resource optimization
1997	Benchmarking by wellness score and company health score
1998	Participation is related to risk and cost moderation
1998	Wellness program opportunities are in preventive care and low risk maintenance
1998	Wellness program opportunities are in high risk intervention and disease management

Source: Health Management Research Center, Univ. of Michigan

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Key Research Findings

Year	Major Findings
1999	Presenteeism is related to risks and diseases
2000	Successful programs must influence the national flow of costs
2001	Participation successfully influences the transition to low risk
2002	Manage the whole person not just the risk or the disease
2003	Predictive modeling is effective for corporations and for individuals

Source: Health Management Research Center, Univ. of Michigan

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Newer Study

Item \ Study	Weighted Average	Goetzel	Comparison
Smoking	27.9	20.7	Lower
Alcohol use	9.8	-7.2	Lower
Obesity	13.3	21.4	Higher
Exercise	7.9	10.4	Higher
Seat belts	10.6	na	na
Cholesterol	10.2	-3.6	Lower
Blood pressure	10.5	12.1	Higher
Drugs & medications	80.4	na	na
Stress	37.9	46.3	Higher
Depression	na	70.2	na
Eating habits	40.5	-8.2	Lower
Life years in study	323,552	113,963	
Years of Study	21	3	

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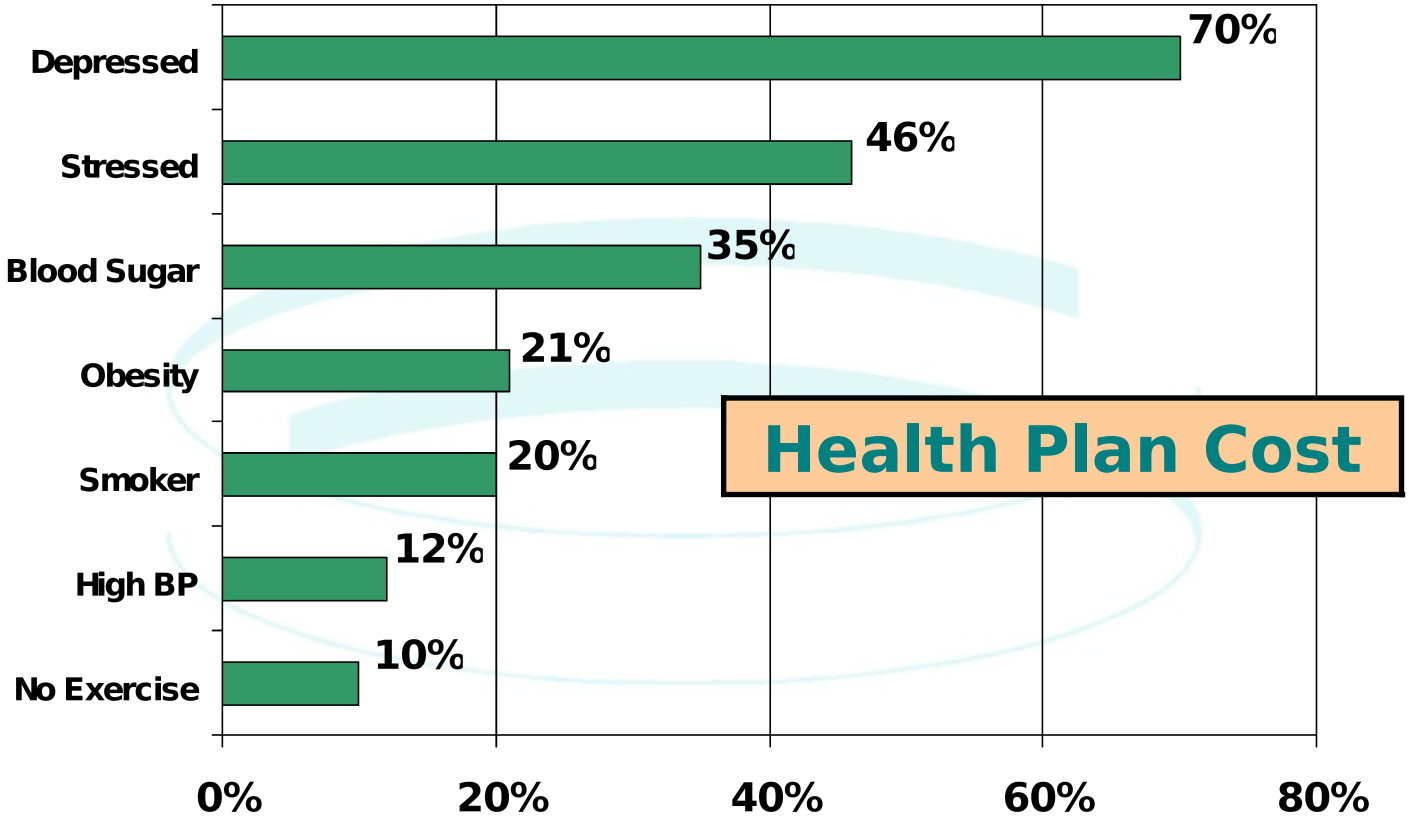
Effect of Single Risk Factors



N = 46,000+X 3 years

Source: Goetzel RZ, et. al. (1998, October). The relationship between modifiable health risks and health care expenditures: An analysis of the multi-employer HERO health risk and cost database. *JOEM*, 40(10):843-54.

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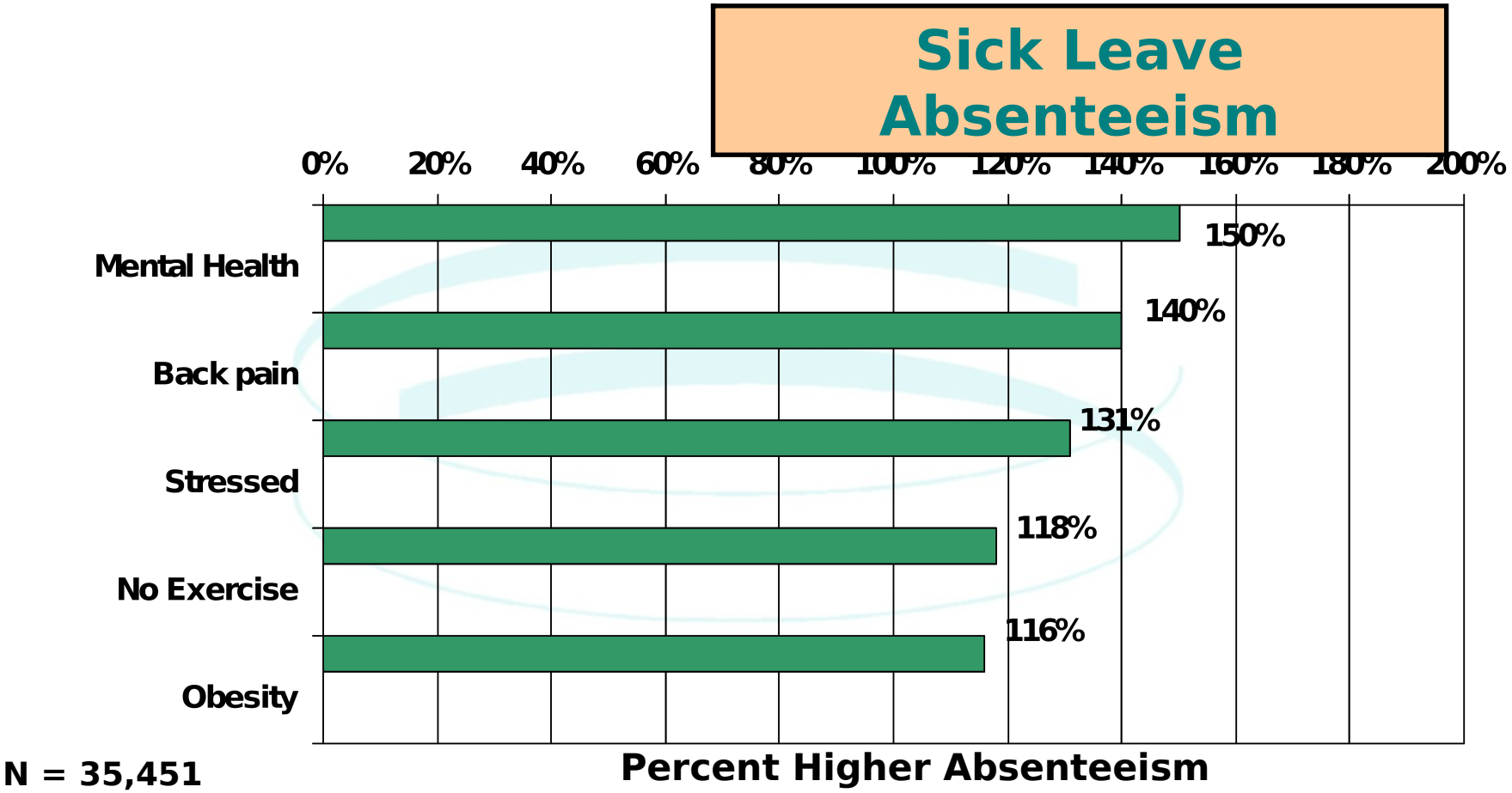
Effect of Single Risk Factors



N = 35,451

Source: Serxner, S., et al., (2001). The impact of behavioral health risks on worker absenteeism. *JOEM*, 43(4), 347-354

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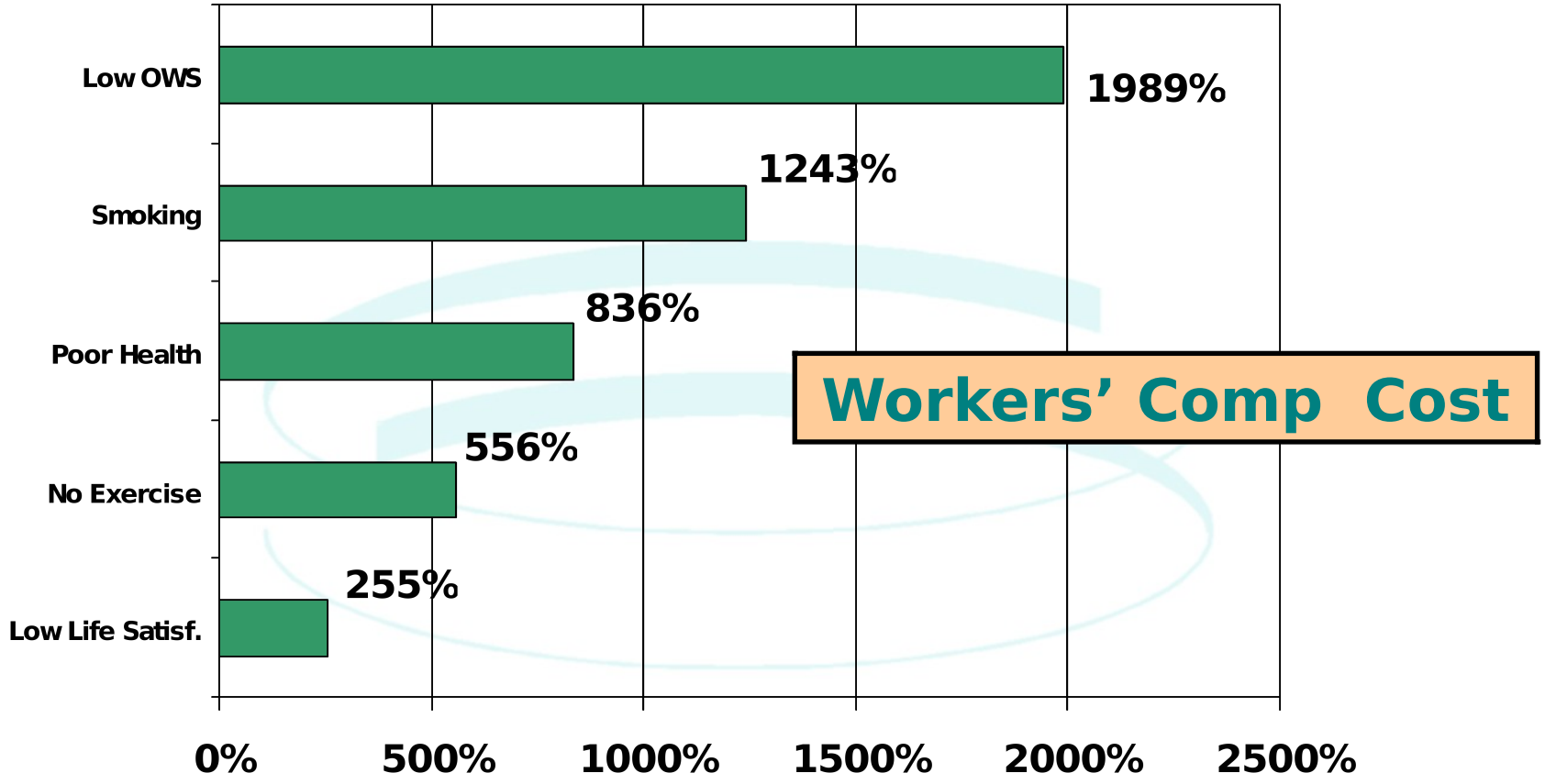
Effect of Single Risk Factors



N = 3,388 X 4 years

Source: Goetzel, S., et. al., (2001, June). The Association of Health Risks with Workers' Compensation Costs, *JOEM*,, p. 534-541.

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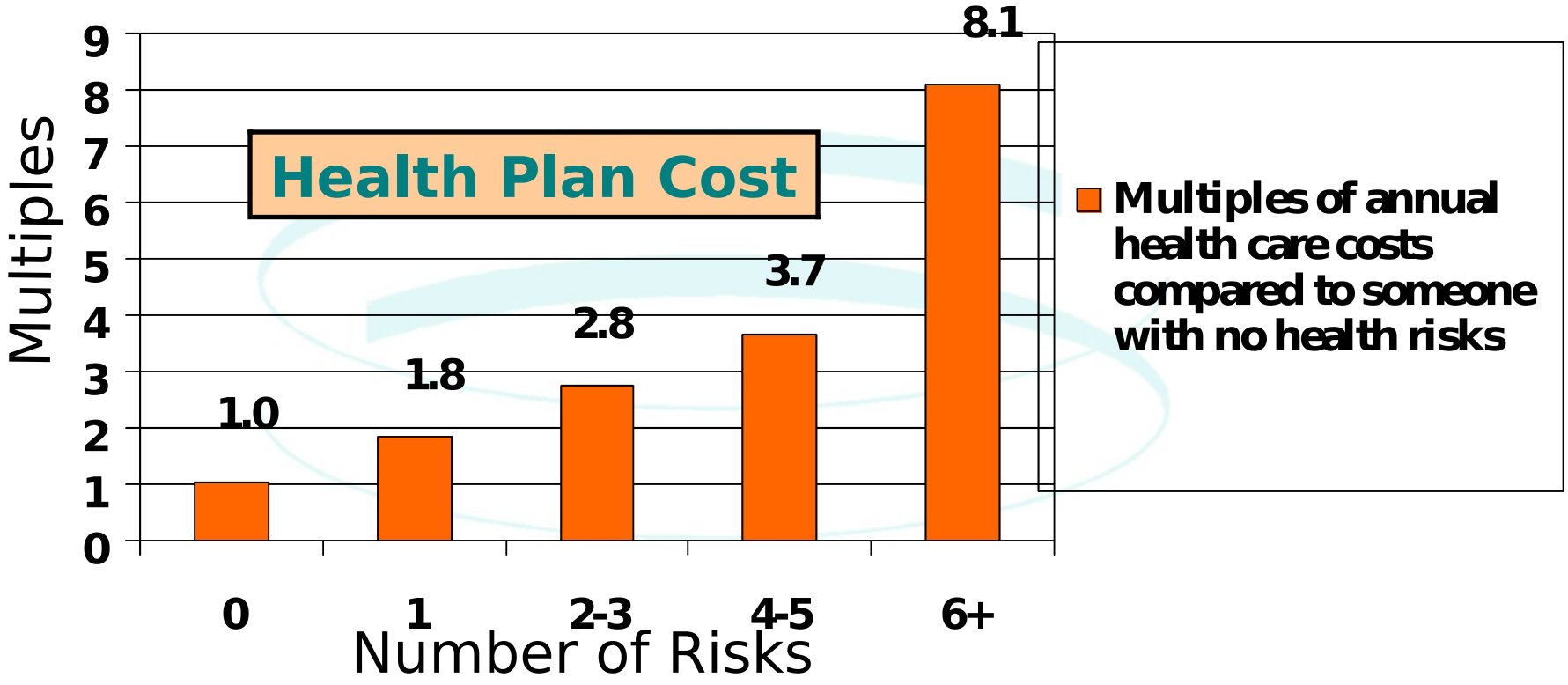
Effect of Multiple Risk Factors



N = 1,838

Source: Yen, Louis, et al., (1991, Sept/Oct). Associations between health risk appraisal scores and employee medical claims costs in a manufacturing co., *AJHP*, 6(1), p. 46-54.

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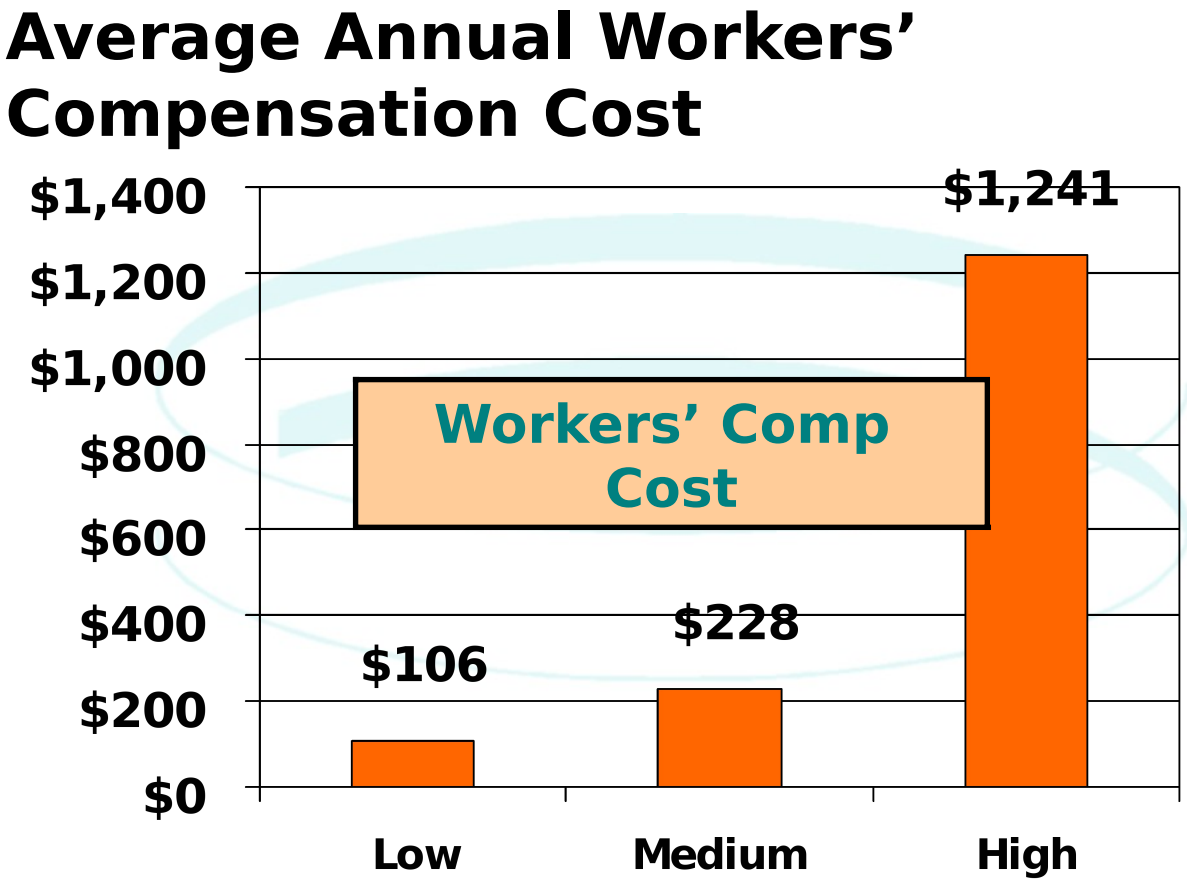
Multiple Risk Factors and WC Costs



N = 3,338

Source: Musich, S., et. al., (2001, June). The Association of Health Risks with Workers' Compensation Costs, *JOEM*, p. 534-541.

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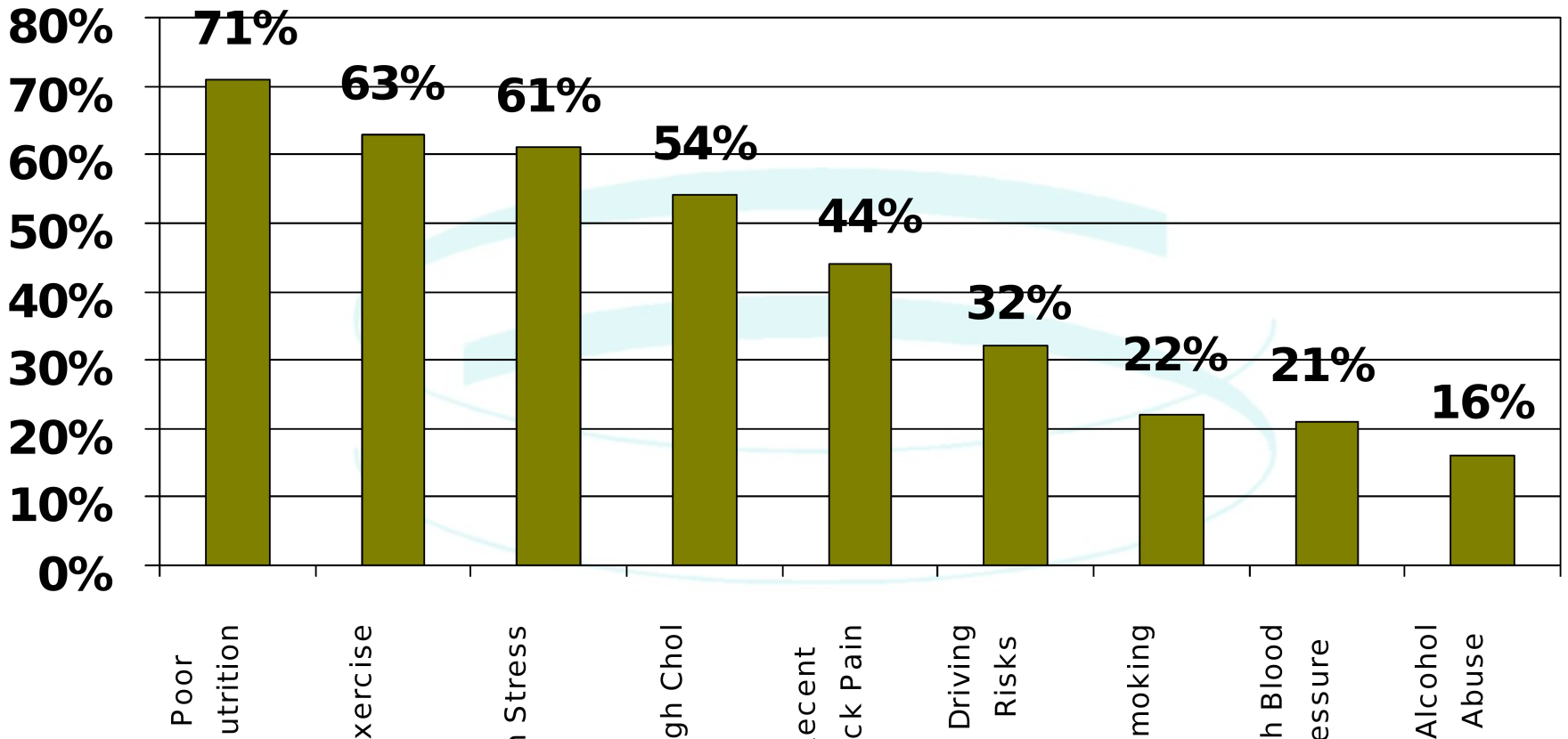
Typical Health Risk Prevalence



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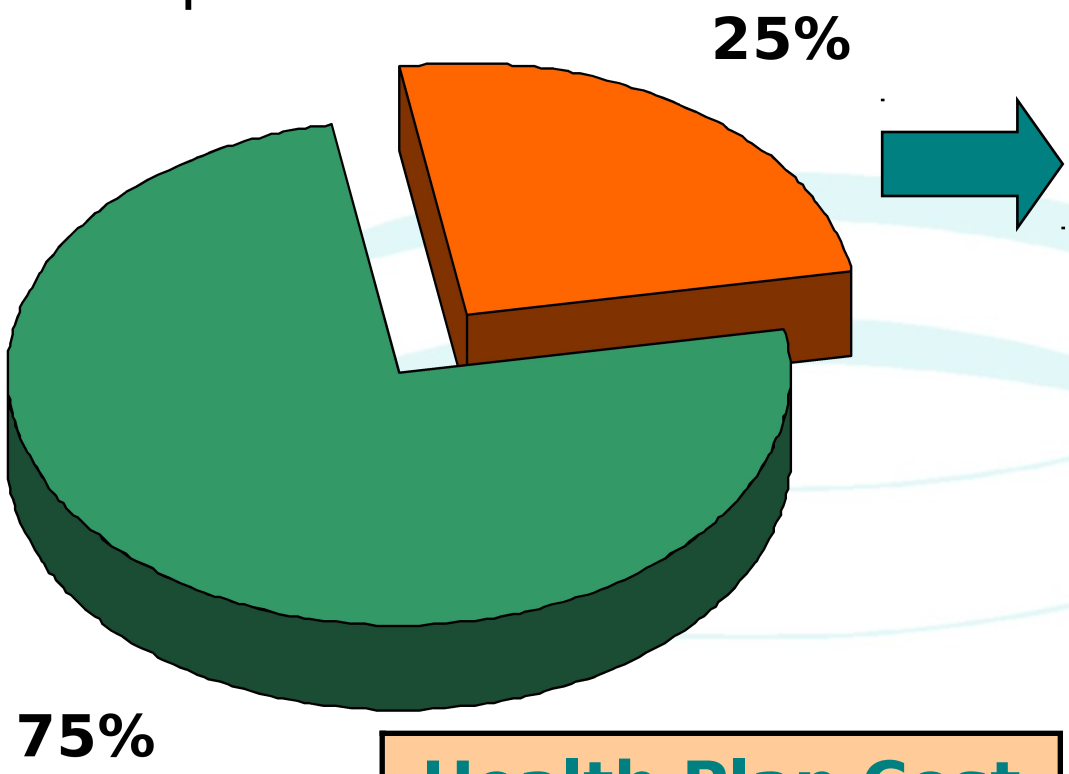
Health Risks and Health Costs

Group Level



Health Plan Cost

N = 46,026 X 6 years

Source: Anderson, D., Whitmer W., Goetzel, R., Ozminkowski, R., Wasserman, and Serxner, S. (2000, September/October). The relationship between modifiable health risks and group-level health care expenditures**.** *American Journal of Health Promotion* 15, (1) 45-52.

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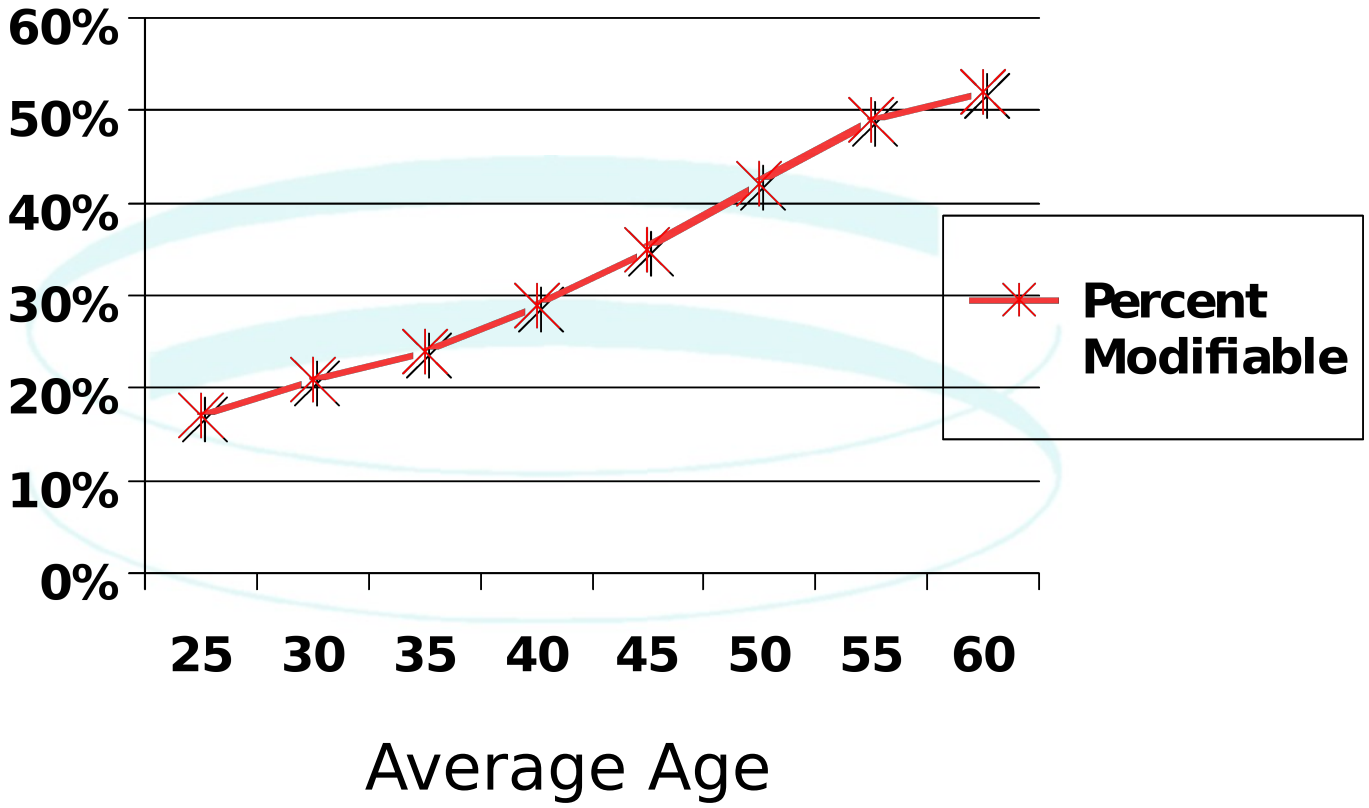
Age and Modifiable Health Costs



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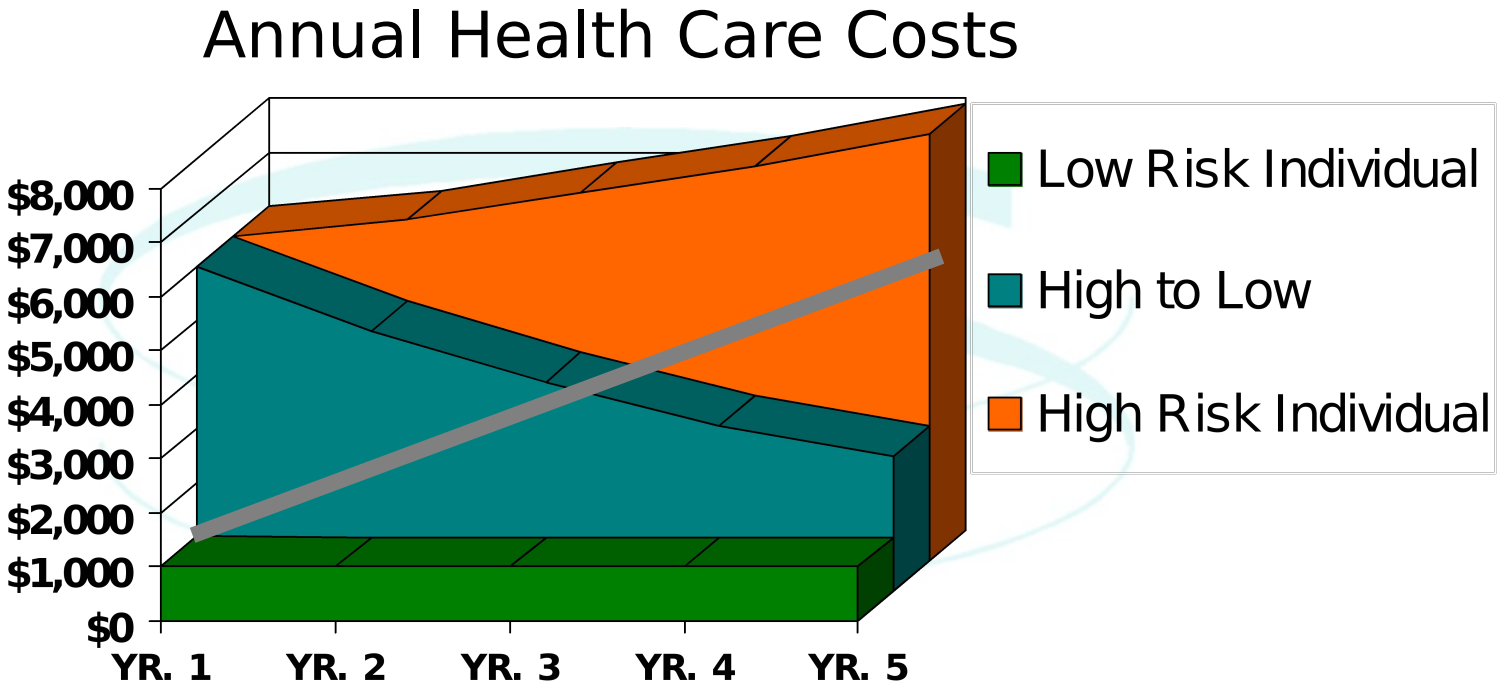
Health Risks and Health Cost Over Time



Source: Updated from Edington, et. al., (1997, November). The financial impact of changes in personal health practices. *JOEM,* 39(11), p. 1037-1046.

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Critical Assumptions

- **Risk measurement**
- **Risk prevalence**
- **Risk severity**
- **Risk migration**
- **Risk capture**
- **Risk consequence**

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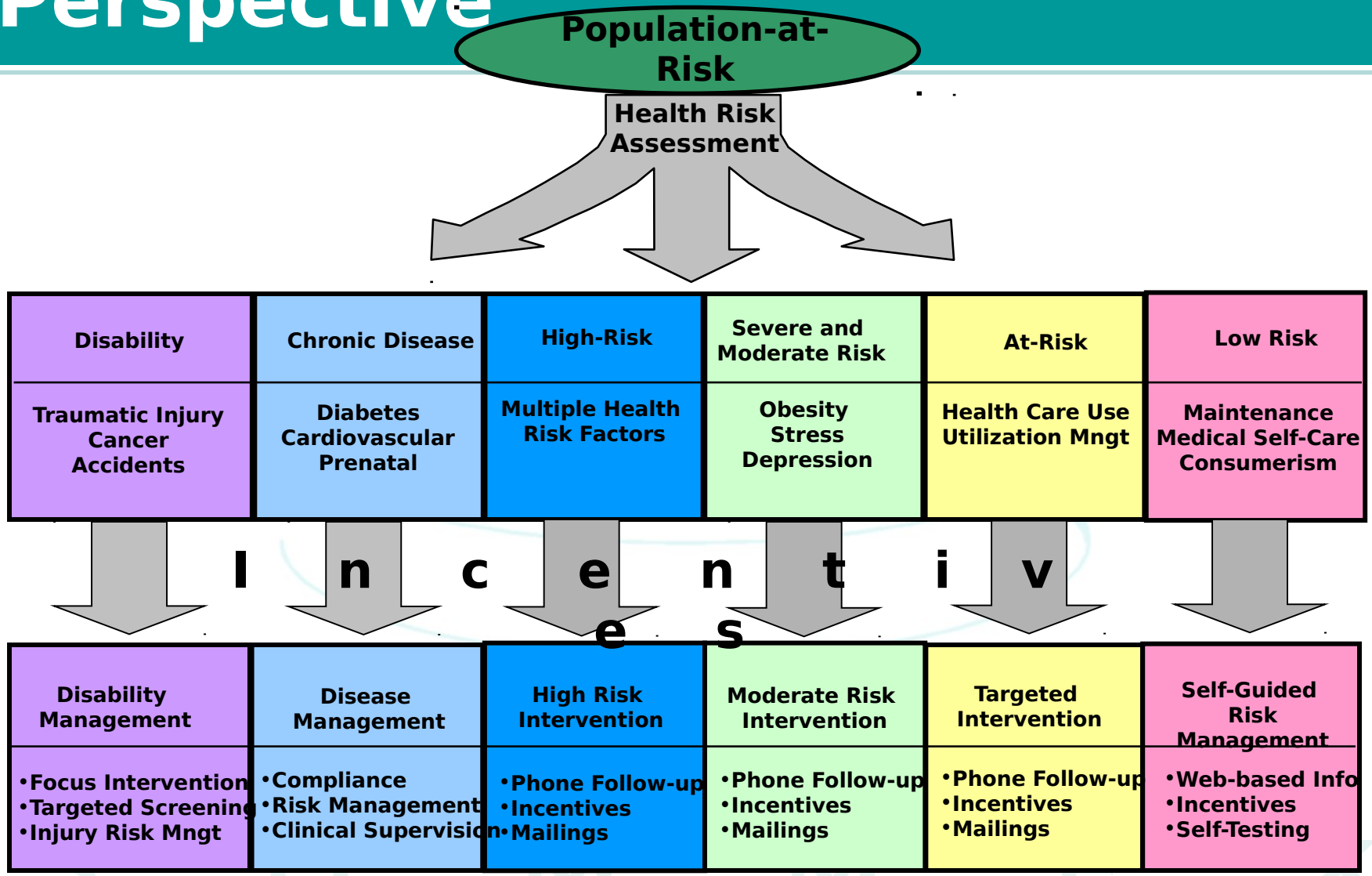
A Strategic and Tactical Perspective



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Summary of Key Points

- **Many early studies have preceded current efforts**
- **Methodology and study quality vary significantly**
- **Health risk are powerful in producing health costs**
- **A large number of inter-relations between and among risks exist**
- **Risks can be modified and produce changes in cost**
- **Rational approaches to risk stratification will be the ultimate approach to deal with health risks**

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Questions?

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May 6	**Presenteeism Made Easy: Understanding its' Utility in Working Populations**
June 3	**Best Practices Series: Using Wellness Incentives: Carrots or Sticks?**

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#4	ROI: Measurement Methods
#5	HSAs: Maximum value
#6	Getting the Most Out of HRAs
#7	Getting the Most Out of Telephone Coaching
#8	Getting the Most Out of Incentives
#9	HPM Series: Persuasive Rationale for CEO
#10	HPM Series: Implementation Strategies
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